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Seminar on Presupposition
Heinrich Heine University
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Homework 9: Presuppositions of Quantified Sentences (or: *Every nation cherishes its king*)

Read: Heim (1983), *On the Projection Problem for Presuppositions*, §1.3, 3-4.

1. Why is *Every nation cherishes its king* a problem for Gazdar's theory?

2. Extra credit: Give another example of a sentence containing a part that has a presupposition containing a free variable (not involving possessives).

3. On p. 402, Heim suggests treating contexts as sets of pairs $\langle g, w\rangle$, where g is an assignment function (a sequence of individuals, or a function from integers to individuals) and w is a world.[1] For example, suppose:

$$c_1 = \left\{ \begin{array}{l} \langle\langle \text{Sweden, Sweden, Sweden}\rangle, w_1\rangle \\ \langle\langle \text{Sweden, Sweden, Sweden}\rangle, w_2\rangle \\ \langle\langle \text{Sweden, Sweden, Sweden}\rangle, w_3\rangle \\ \langle\langle \text{Sweden, Sweden, America}\rangle, w_1\rangle \\ \langle\langle \text{Sweden, Sweden, America}\rangle, w_2\rangle \\ \langle\langle \text{Sweden, Sweden, America}\rangle, w_3\rangle \\ \langle\langle \text{America, Sweden, America}\rangle, w_1\rangle \\ \langle\langle \text{America, Sweden, America}\rangle, w_2\rangle \\ \langle\langle \text{America, Sweden, America}\rangle, w_3\rangle \\ \langle\langle \text{America, Sweden, Sweden}\rangle, w_1\rangle \\ \langle\langle \text{America, Sweden, Sweden}\rangle, w_2\rangle \\ \langle\langle \text{America, Sweden, Sweden}\rangle, w_3\rangle \end{array} \right\}$$

   And assume the following distribution of facts in worlds (which we can refer to as a 'model'):

   Sweden is a nation: $\{w_1, w_2, w_3\}$
   America is a nation: $\{w_1, w_2, w_3\}$
   Sweden has a king: $\{w_1, w_2, w_3\}$
   America has a king: $\{w_3\}$
   Sweden cherishes its king: $\{w_1, w_3\}$
   America cherishes its king: $\{w_3\}$

   With this way of representing contexts, we can update contexts with sentences containing free variables. Updating a context c with (9) 'x_i has a king' gives: $c_1 \cup \{\langle g, w\rangle : g(i)$ has a king in $w\}$. Let c_2 = 'c_1+ 'x_3 has a king'. What sequence-world pairs does c_2 contain?

4. The CCP that Heim gives for *every* is in (21), repeated here:

[1] I will represent assignment functions as ordered sequences like ⟨America,Sweden,America⟩ but also use function notation, so if $g = \langle$America,Sweden,America$\rangle$ then $g(1) =$ America, $g(2)$ = Sweden, $g(3)$ = America.

c + Every x_i A, B $= \{\langle g, w\rangle \in c$: for every a, if $\langle g^{i/a}, w\rangle \in c$+A, then $\langle g^{i/a}, w\rangle \in c$ + A + B$\}$

where:

- $g^{i/a}$ is the assignment that is the same as g except that the individual a is assigned to the number i, and
- x_i must be a "new" variable in the sense of Heim's (22): x_i is a **new variable** with respect to context c iff: For any two sequences g and g' that differ at most in their i-th member, and for any world w: $\langle g, w\rangle \in c$ iff $\langle g', w\rangle \in c$.[2]

Let us consider an example to see how this works. Suppose that A = x_3 is a nation, and B = x_3 cherishes x_3's king. We want to compute c + 'Every x_3, x_3 is a nation, x_3 cherishes x_3's king' for an appropriate c. Here is a guide:

(a) Is x_3 "new" in c_1 in the sense made explicit in (22) assuming that the only two elements of the domain are Sweden and America? Explain.

(b) Is c_1+A defined? Why or why not? If so, what is it? (Remember that an update is defined if the context entails all of its presuppositions. You can assume that 'x_3 is a nation' has no presuppositions.)

(c) Is (c_1+A)+B defined? Why or why not? If so, what is it? Remember that in order to admit (satisfy-the-presuppositions-of) 'x_i cherishes x_i's king', a context must entail 'x_i has a king'. By this Heim means that "it has to be a context c such that, for every $\langle g, w\rangle \in c$, $g(i)$ has a king in w'."

(d) Suppose that we change the model so that America has a king in w_1, w_2 and w_3. Is (c_1+A)+B defined? If so, what is it?

(e) Is c_1 + 'Every x_3, x_3 is a nation, x_3 cherishes x_3's king' defined? If so, explain why and compute its value and show how you arrived at your answer. If not, why not?

(f) If we change the model so that America has a king in every world, is c + 'Every x_3, x_3 is a nation, x_3 cherishes x_3's king' defined? If so, why? If not, why not?

(g) Using the model where both Sweden and America have a king in every world, maintaining the assumption that Sweden cherishes its king in w_1 and w_3, what is the resulting set of sequence-world pairs? I.e., what is the value of:

$$c_1 + \text{'Every } x_3, x_3 \text{ is a nation, } x_3 \text{ cherishes } x_3\text{'s king'?}$$

5. For any context c, it turns out that c + 'Every x_3, x_3 is a nation, x_3 cherishes x_3's king' is defined whenever the following is true:

   For every $\langle g, w\rangle \in c \cup \{\langle g, w\rangle : g(3)$ is a nation in $w\}$, $g(3)$ has a king in w.

   Combined with the fact that x_3 is required to be a "new" variable, this means that *Every nation cherishes its king* is predicted by Heim's system to presuppose that every nation has a king. Explain how this universal presupposition arises.

6. Extra credit: Heim's system predicts that (25) (*A fat man was pushing his bicycle*) presupposes that every fat man has a bicycle. Explain how this prediction comes about in your own words.

[2] In other words, for every pair $\langle g, w\rangle$ that you have in the context, for every x distinct from $g(i)$, there has to be another pair $\langle g', w\rangle$ where $g'(i) = x$. The value of i cannot be restricted to certain individuals.